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A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH

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Dear Sir:

Nuclear reactor contract originally scheduled to be awarded by the USAEC to General Electric Co. has been switched by the Commission to Allis-Chalmers Manufacturing Co. Involved is the nuclear portion of a 50,000 net electrical kilowatt prototype nuclear power plant which would incorporate a boiling water reactor of improved engineering design. In June the USAEC had evaluated bids of General Electric, Allis-Chalmers, Combustion Engineering, and Westinghouse Electric. GE's bid was some $12.5 million; Allis-Chalmbers had bid $10,760,370. GE's construction plans however showed use of internal steam separation, and since the USAEC considered this a major advance in boiling-water nuclear reactor technology, its higher bid was accepted. Subsequently the Commission reviewed the matter, and decided to accept the A-C bid which will use an external steam separator. A-C's bid price includes the design, fabrication, construction, and testing of the reactor; furnishing the first core and spare fuel elements; and providing training of operating staff. (Other CONTRACT NEWS, p.4 this LETTER.)

Texas Nuclear Corp., Austin, Texas will be acquired by Nuclear-Chicago Corp., in an exchange of stock. Basis of the exchange is one share of Nuclear-Chicago for each 3½-shares of Texas Nuclear. The offer will become effective when it is accepted by holders of 80% of the 100,000 outstanding shares of Texas Nuclear. Nuclear-Chicago, Des Plaines, Ill., has 743,006 shares outstanding at present. Texas Nuclear manufactures a neutron generator and related equipment and does contract research. Under the acquisition plan it would retain its name and organization and be either a subsidiary or division of Nuclear Chicago which produces a line of nuclear instruments and accessories. (Other FINANCIAL NEWS, p.5 this LETTER.)

Newly established group which will do biochemical synthesis of labeled compounds has been set up at New England Nuclear Corp., Boston, Mass., a firm which calls itself the largest producer in the U.S. of radioactive chemicals. Pincus Peyser, who will head the group, has a background in biochemistry. (Other MANUFACTURERS' NEWS, p.3 this LETTER.)

New plant to produce thorium compounds is to be built at cost of some $400,000 by Rio Tinto Dow, Canada's sole producer. The new facilities, scheduled for completion in about four months, will be located at the Nordic plant of Rio Algom Mines. They will enable continued production when Rio Algom closes at the end of this year its Quirke Lake uranium mine and concentrator where the thorium plant is now located. Rio Tinto Dow recovers its thorium from liquors resulting after uranium values have been stripped from leach solutions in the uranium plant. The existing 150-ton per year plant has been operating at Quirke since early in 1959; the new plant will be of similar capacity. Rio Tinto Dow officials noted that they have developed a number of outlets for their product and want to ensure uninterrupted supply. (Other RAW MATERIAL NEWS, p.2 this LETTER.)

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ATOMIC ENERGY BUSINESS NEWS...

EQUIPMENT GRANTS MADE: Grants totaling some $1,547,538 have now been made by the USAEC to 113 U. S. universities and colleges for the purchase of nuclear laboratory equipment. Approval of these latest grants brings to $18,407,892 the total allocated by the Commission to educational institutions since the program was started four years ago. The Commission has also loaned about $10 million worth of nuclear materials to these same institutions. Another series of grants to educational institutions for purchase of nuclear laboratory equipment is planned by the USAEC in April, 1961.

INDUSTRIAL X-RAY MACHINE BEING BUILT: Described as the world's most powerful x-ray machine specifically designed for high speed radiography in the metals industry is an eight million electron-volt linear accelerator now being built by High Voltage Engineering Corp., Burlington, Mass., for A. O. Smith Corp. The linear accelerator is designed for non-destructive testing of steels more than 12-inches thick. Smith is spending $700,000 on the project, with installation planned for next Spring. (Several lower powered accelerators of this type have been supplied by High Voltage for radiographic use in government laboratories in the U. S. and England. The largest of these produces only about one-sixth the radiographic intensity of the equipment being built for A. O. Smith which will produce 6,000 roentgens per minute using 8 MEV. While some other types of equipment use higher voltages, they do not produce x-rays of such high intensity.)

NUCLEAR POWER STATIONS UNDER TEST: Yankee Atomic Electric Co.'s nuclear power plant at Rowe, Mass., is now going through a period of experimental generation of electricity. The testing began about 10-weeks after initial criticality had been achieved the latter part of August. The company expects to operate at a level of over 100,000 kw before the end of the year; full rated output of the plant is 136,000 kw. The reactor used is the largest yet designed and developed by Westinghouse Electric Corp.

West Germany's first nuclear power station, the Kahl plant, near Frankfort, using a boiling water reactor designed by General Electric Co.'s Atomic Power Equipment Department, has achieved criticality. The reactor was supplied through International General Electric Co. S. A., subsidiary of the U. S. firm. The plant is owned by Rheinisch-Westfaelisches Elektrizitatswerk and Bayenwerk, two large W. German utilities. The 15,000 kw Kahl plant will operate at power levels up to 1,000 kw for about three months. After these tests the core will be completely loaded with fuel and the reactor brought to full rated power. In addition to supplying the reactor, GE trained operating staff and supplied the nuclear fuel consisting of 6.6-tons of slightly enriched uranium dioxide. This was fabricated into 88 fuel element assemblies. Prime contractor for the Kahl plant is Allgemeine Electrizitats-Gesellschaft, W. German electrical equipment manufacturer.

SUPREME COURT TO REVIEW NUCLEAR POWER PLANT DISPUTE: The Supreme Court agreed last week to review a decision of a lower court which set aside a construction permit granted by the USAEC to Power Reactor Development Associates for its Fermi nuclear power station in Monroe County, Mich. The decision, by the U. S. Court of Appeals, Washington, had held inadequate the findings by the USAEC that the plant could be operated without risk to public safety. In a 2-to-1 ruling the Court of Appeals had told the Commission to make a further safety study. Litigation over the plant was begun by three unions which contended that the reactor would be a hazard. Both the company and the USAEC petitioned for review of the case by the Supreme Court.

RAW MATERIALS...prospecting, mining, marketing...

LITHIUM PRODUCTION TO BE RESUMED: Mining and milling operations will shortly be resumed by Quebec Lithium Corp. at the company's Northwestern Quebec lithium property. The company, Canada's only producer of lithium concentrates and products, will operate its mill initially at only about 100 tons per day, or about 10% of rated capacity. First sales of lithium concentrates are expected to be made early next year.

URANIUM MILLING PLANT FOR SHIRLEY BASIN PRODUCER: Construction of a 500-ton-per-day capacity uranium milling plant is planned by Petrotomics, Inc., for ore mined by the company in the Shirley Basin area of Wyoming. Petrotomics is a uranium mining and milling venture formed by Kerr-McGee Oil Industries, and the Skelly, Getty and Tidewater oil companies. The company holds USAEC contract, awarded in August, to deliver up to 1 million pounds of uranium concentrates in ore prior to March 31, 1962 and more than 3 million pounds as yellowcake prior to contract termination December 31, 1966.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...

NEW PRODUCTS: Trade-named Racobalamin-57, cobalt-57 labeled vitamin B-12 is supplied in solution or capsule form for diagnosis of pernicious anemia by the Schilling test. The use of the cobalt-57 to label the vitamin B-12 is said to have two advantages over the use of cobalt-58 or cobalt-60: a lesser total absorbed radiation dose to the liver and greater counting efficiency. --Abbott Laboratories, Oak Ridge, Tenn.

Calibrated reference standards for gamma spectrometry are available as 1.25"-diameter plastic discs for use with systems accepting standard disc type samples or as 5" x 5/8"-diameter plastic cylinders for use with standard well-type detectors. Sets of five different sources are packaged in one box: cobalt-57, cesium-137; manganese-54; sodium-22; and cobalt-60. Single units, including barium-133, are available separately. --New England Nuclear Corp., Boston, Mass.

PRODUCT NEWS: Heavy water is now being leased by Bio-Rad Laboratories, Richmond, Calif., for periods ranging from three months to two years. The rental procedure is as follows: The customer takes delivery of the heavy water on a lease-purchase basis, uses it as he desires, and returns the material when he wishes. A credit is given based on the length of time the heavy water has been kept and the amount of dilution it has undergone. (Bio-Rad are considering similar leasing programs covering other stable isotopes including nitrogen-15 and carbon-13.)

Deliveries of uranium to the Bradwell-on-Sea (England) nuclear power station are now underway. The material is being shipped from the U.K. Atomic Energy Authority's plant at Springfield, Lancs., where fuel elements for all the Central Electricity Generating Board's nuclear power stations are being made.

Described before the American Chemical Society's southeastern regional meeting in Birmingham, Ala., last fortnight was a fission gas detector designed to monitor the exit air activity of a direct cycle aircraft nuclear propulsion reactor. As described by R. C. Lee of General Electric Co.'s aircraft nuclear propulsion department, the sensing element used is a 3-inch square crystal of thallium-activated sodium iodide. A continuously moving negatively charged wire draws positive ions generated by beta decay into the detector shield. Fission product concentration is determined by later decays with gamma ray emission. It has been found possible to scan isotopes with half-lives as short as a minute, with the detector.

Uranium purchasing by the USAEC was described at last fortnight's meeting of the Chemical Market Research Association by J. U. Shepardson and A. E. Ruehle of Mallinckrodt Chemical's uranium division. In discussing chemical consumption in the production of uranium, they estimated that in the next six years the USAEC will buy an average of 26,000-tons per year of uranium oxide. Some 18,000 tons of this will come from U.S. producers; 4,500-tons from Canada; and 3,500-tons from overseas sources. They noted that of the 8.1 million tons per year of uranium ore being processed, some 80% will be recovered using sulfuric acid leaching. This will result in consumption of 820,000-tons per year of sulfuric acid on the basis of 250-tons of acid for each ton of ore treated.

Research program on the non-nuclear uses of uranium, sponsored by Canada's Department of Mines and Technical Surveys and Eldorado Mining and Refining, underway for some months, has been directed to metallurgical uses for uranium. There has been some success in uranium use as an alloying agent with steels. Patent applications have been made in some cases, according to S. L. Gertsman, chief of the physical metallurgy division, mines branch, in the Department. Research has shown that uranium alloyed steels have less pitting corrosion, show resistance to fatigue, and have a higher resistance to stress corrosion. It was also found that when alloyed, the steels had enhanced elevated temperature properties. Currently, the Department of Mines and Technical surveys is spending $150,000 per year on the work, with Eldorado contributing another $100,000 annually.

MANUFACTURERS' NEWS: Radiation monitoring system, believed to be the most complete for a single installation, has been delivered by Victoreen Instrument Co., Cleveland, to the Hallam, Nebraska, nuclear power plant which is now under construction. The system was built under contract to Atomics International division of North American Aviation, designers of the reactor. The system includes monitoring units for radiation level determination in effluent gases, in sanitary sewage leaving the plant, at the radioactive waste storage area, and in other plant areas.

ATOMIC ENERGY CONTRACT NEWS...

BIDS ASKED: The Government of India has invited bids on a 300 emw nuclear power station to consist of two reactors fueled with natural uranium. Estimated to cost some $107 million, the project will be located at Tarapur, on India's west coast between Bombay and Ahmedabad. Although the bid request called for natural uranium as fuel, U.S. bidders were advised that they may submit proposals based on enriched fuel. Bids are to cover the design, manufacture, supply, delivery, erection, setting to work, testing and maintenance (for an initial period) of the complete power station. Bidders were asked to quote the minimum foreign exchange content of the price and to use to the greatest extent possible Indian materials, locally fabricated equipment and Indian personnel. Deadline for bid submission is May 31, 1961.

Bids to furnish 560 radiation biology accessory kits for educational institutions have been invited by New York Operations Office, USAEC, 370 Hudson St., New York, N.Y. Deadline for bid submission is November 28.

Bids for a $9 million nuclear ship with a removable reactor have been requested of German shipyards by the industrial association, Society for Utilization of Nuclear Energy in Shipbuilding and Navigation. The ship is to contain an organic moderated reactor being developed by the Society and Interatom, the latter a subsidiary of the German Demag and the U.S. Atomics International. Deadline for submission of bids is June 30, 1961. The shipyard submitting the bid may specify either a tanker, an ore carrier or a passenger ship; the decision rests with the bidder.

CONTRACTS AWARDED: Contract has been placed with Foster-Wheeler (Great Britain) for work on the second British nuclear submarine. The first British nuclear was built with assistance from U.S.; the second craft will be entirely British in concept and production.

PROPOSALS UNDER CONSIDERATION: Proposals submitted in August to Empire State Utility Power Resources Associates for a power reactor in the 300 emw range for New York state location are still being evaluated. Making up the Associates are Central Hudson Gas & Electric Corp.; Consolidated Edison Co. of New York; Long Island Lighting Co.; Niagara Mohawk Power Corp.; New York State Electric & Gas Corp.; Orange & Rockland Utilities, Inc.; and Rochester Gas & Electric Corp.

NEW BOOKS & OTHER PUBLICATIONS...

Beta Ray Gauges for Gas Density Measurements. B. W. Schumacher. 19 pages. --Ontario Research Foundation, 43 Queens Park, Toronto, Ontario, Canada. ($2.50).

Modern Nuclear Technology. Mark M. Mills, Arthur T. Biehl, Robert Mainhardt, editors. Based on series of lectures at University of California in 1956 and 1957 in course: "A Survey of Nuclear Engineering for Management". --McGraw-Hill Book Co., Inc., New York, N.Y. ($9.50)

Physics of the Atom. M. Russell Wehr, James A. Richards, Jr. Text for student with knowledge of calculus. --Addison-Wesley Publishing Co., Inc., Reading, Mass. ($8.75)

Short Course in Basic and Applied Isotope Technology. W. H. Johnston, and others, of W. H. Johnston Laboratories, Inc. Prepared under USAEC contract. No. JLI-650-1-3. ($3.00).....Neutron Cross Section Evaluation Group Newsletter No. 2, 1960. No. BNL-634. (50¢) --Office of Technical Services, Wash. 25, D.C.

Symposium on Metallic Moderator and Cladding Materials. Proceedings of the seventh symposium sponsored by the metallurgical society of the American Institute of Mechanical Engineers. --American Instutute of Mechanical Engineers, New York, N.Y. ($7)

Status Report on Gas Cooled Reactors as of 1959; Book 8 of Part III. No. TID-8518-8. --Superintendent of Documents, Wash. 25, D.C. (55¢)

NOTES: Laboratory manual on radioisotopes for use in college and university chemistry courses has been prepared by Nuclear-Chicago Corp. under contract to the USAEC's Office of Isotopes Development. Sample copy of the manual, with instructor notes, may be obtained free by university and college teachers on request to Nuclear-Chicago Corp., 359 East Howard Ave., Des Plaines, Ill. Multiple copies for student use are available from the company or Office of Technical Services, Wash. 25, D.C. at $2.00 per copy for the manual and $1 per copy for the instructor notes.

Brochure listing 175 schools in the U.S. offering instruction in the nuclear field has been prepared by Oak Ridge Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn. It may be obtained free on request.

ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED November 8, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Process for manufacture of lithium nitrate. David R. Stern, inventor. No. 2, 959,463 assigned to American Potash & Chemicals Corp. (2) Neutron irradiated hydrocarbon conversion process. Robert B. Long, Robert W. Houston, Henry J. Hibshman, John P. Longwell, inventors. No. 2,959,529 assigned to Esso Research & Engineering Co., (3) Radiochemical hydrogenation process. Robert B. Long, Peter J. Lucchesi, Barry L. Tarmy, Chester L. Read, inventors. No. 2,959,530 assigned to Esso Research and Engineering Co. (4) Solid resins from irradiated epoxidized liquid conjugated diene polymers. Charles E. Wheelock, inventor. No. 2,959,531 assigned to Phillips Petroleum Co. (5) Radiation gauges having ionization chambers. Gordon F. W. Powell, inventor. No. 2,959,679 assigned to Molins Machine Co., Ltd., London, England. (6) Particle accelerator. Vincent A. Campanile, inventor. No. 2,959,700 assigned to Shell Oil Co.

PATENTS ISSUED November 8, 1690 to GOVERNMENTAL ORGANIZATIONS: (1) Fluid disposing means, Harvey N. Pouliot, inventor. No. 2,959,326 assigned to USAEC.

PATENTS ISSUED November 15, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Process for treating plastics and products thereof. Paul M. Cook, James B. Meikle, Bruce Graham, inventors. No. 2,960,453 assigned to W. R. Grace & Co., New York, N.Y. (2) Level control apparatus. Jerome Kohl, inventor. No. 2,960,607 assigned to Tracerlab, Inc., Waltham, Mass. (3) Radiological well logging. Fontaine C. Armistead, inventor. No. 2,960,608 assigned to Texaco Development Corp., New York. N.Y. (4) Geiger counter. Frank P. Smith, inventor. No. 2,960,609 assigned to International Telephone and Telegraph Co. (5) Compact neutron source. Alfred J. Gale, inventor. No. 2,960,610 assigned to High Voltage Engineering Corp., Cambridge, Mass.

PATENTS ISSUED November 15, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Direct ingot process for producing uranium. William M. Leaders, Walter S. Knect, inventors. No. 2,960,398 assigned to USAEC. (2) Pulsed indicator circuit. William I. Linlor, Quentin A. Kerns, inventors. No. 2,960,653 assigned to USAEC. (3) Coincidence occurrence indicator. Gerson H. Robison, John F. Dickson, inventors. No. 2,960,687 assigned to USAEC.

MEETINGS, COURSES, CONFERENCES...

CONFERENCES: Metallurgy of Beryllium will be the topic of an international conference planned for Oct. 16-18, 1961 by the Institute of Metals, London. Original papers have been invited; authors should submit titles and synopses by Jan. 1, 1961 and final papers, in duplicate, by April 1, 1961. Details may be obtained from Institute of Metals, 17 Belgrave Square, London S.W. 1, England.

MEETINGS: Sections on nuclear reactor operations and nuclear chemical plant safety are scheduled for annual meeting of American Institute of Chemical Engineers, Dec. 4-7, 1960, Washington, D.C. Full information may be obtained from AI ChE, 25 W. 45th St., New York 36, N.Y.

Fifteenth annual meeting of American Rocket Society, to be held Dec. 5-8, 1960 in Washington, D.C., will include symposia on nuclear rockets. Details may be obtained from American Rocket Society, 500 Fifth Ave., New York 36, N.Y.

ATOMIC ENERGY FINANCIAL NEWS...

OIL PRODUCER WITH URANIUM INTERESTS HAS BETTER EARNINGS: Better earnings for Kerr-McGee Oil Industries, Inc., in the first half of fiscal 1961 should push ahead of the like 1960 period, Dean A. McGee, president, has predicted. Mr. McGee noted that in fiscal 1960 ended June 30 the company had record profit of $7,287,457 on revenues of $157,785,376. He said the firm is very much interested in the minerals end of its business; uranium mining and milling by the company's subsidiary Kermac Nuclear Fuels Corp. are ahead of last year and its uranium mill at Shiprock, N.M., is operating at above design capacities. (Mill is planned for Petrotomics, in which the company has an interest; p.2 this LETTER.)

Sincerely,

The Staff,
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